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Incompatibility Systems and Pollination of Amazonian Trees

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Mating system of tropical plants is mainly regulated by incompatibility to self-pollen. Modes of self-incompatibility are represented basically by Sporophytic self-incompatibility (SSI), Gametophytic self-incompatibility (GSI), Heteromorphic self-incompatibility (HetSI) and Late acting self-incompatibility (LSI). We studied the reproductive system of native Amazonian timber trees, as follows: *Jacaranda copaia* (Aubl.) D. Don (Bignoniaceae), *Dipteryx odorata* (Aubl.) Willd. (Leg-Papilionoideae), *Carapa guianensis* Aubl. (Meliaceae) and *Bertholletia excelsa* Humb. & Bonpl. (Lecythidaceae). These species are hardwood trees used in the forestry industry, but *B. excelsa* is protected by the Brazilian environmental legislation, due to its ecological importance and non-forestry product use. The studies were conducted in the Western Amazon (Pará State), North of Brazil, in dense ombrophilous forest and cultivated fields. We studied the pollination and reproductive systems, in order to characterize the incompatibility systems of these plants and main pollinators. Controlled pollination tests were accomplished in isolated flowers of each species. Pollinated pistils were fixed in FAA after 48 h, softened in NaOH 8M solution and prepared with Aniline Blue to visualize pollen tube growth under epifluorescence microscope (excitation wave length 450-490 nm). Floral visitors were surveyed, collected, prepared and identified according to their behavior as effective or occasional pollinators, or pollen/nectar robbers. The analysis of controlled pollination tests revealed that all the species are mainly allogamous, thus dependent on pollinators to mediate pollen transfer among individual plants. Three major SI systems were recorded: LSI in *J. copaia* and *D. odorata*, and, apparently, SSI in *C. guianensis*; and GSI in *B. excelsa*. In terms of pollinator activity, *J. copaia* was visited by small bees (e.g. *Centris*, *Euglossa*), *D. odorata* and *B. excelsa* by large bees (e.g. *Xylocopa*, *Epicharis*, *Bombus* and *Eulaema*), *C. guianensis* by microlepidopterans (Riodinidae and Lycaenidae) and stingless bees (Meliponina).